Ownership Structure of Oil Revenues, Political Institutions and Financial Markets in Oil-Producing Countries

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Abstract

This study examines the impact of the ownership structure of oil revenues on financial markets and institutions by considering the role of political institutions. We use the fixed effects model and data from 82 oil-producing countries to uncovered very interesting findings. First, the government's share of oil revenues investment undermines the quality of financial institutions when the quality of political institutions is weak and enhances their quality when political institutions is strong. Second, the private share of oil revenue investment is negative on the depth of and access to financial institutions when the quality of political institutions is weak and their quality is stabilized when political institutions is strong. Finally, in the subsample of developing countries, similar threshold effects are observed for the depth of and access to financial markets. We conclude that oil-producing countries need solid political institutions to fully benefit from oil wealth to boost financial development.

1. Introduction

There is a large body of the literature that explores the causes of financial development. A relatively scanty portion of the literature, however, focuses on the link between natural resources and financial development. Among the few studies on the effect of natural resources on financial development are Beck, Demirgüç-Kunt and Levine (2003), Acemoglu and Johnson (2005), Bhattacharyya and Hodler (2014), Dwumfour and Ntow-Gyamfi (2018) and Asif et al. (2020). Beck et al. (2003) propose the endowment theory of financial development, which states that the quality of institutions that are erected by colonizers is influenced by resource endowment and disease environment of countries encountered by the colonizers. Extractive institutions are erected in countries with endowed resources but with a disease environment. This disease environment is characterised by paralysed state institutions left by colonizers, weak *property rights* (the extent to which economic resources are owned and used) and poor *contract enforcement* (roles set and administered by a state), which negatively influence financial development.

The aim of this study is to explore the ownership structure of oil revenues on financial markets and institutions development, and further consider the role of political institutions on the impact of the ownership structure on financial markets and institutions development. Studies on financial development and natural resources wealth focus on aggregate of natural resource revenues and how it promotes specific sectors of the financial markets without disaggregating it into private and government investments of such revenues (see Bhattacharyya & Hodler, 2014; Dwumfour & Ntow-Gyamfi, 2018; Khan, Gu, Khan & Oláh, 2020; Dogan, Madaleno, & Altinoz, 2020). Dwumfour and Ntow-Gyamfi (2018) study the effect of natural resource revenue on banking sector development (credit to the private sector and bank stability) whilst

Bhattacharyya and Hodler (2014) investigate the role of natural resource on banking sector and stock market development (private credit, Deposit Banks, stock market capitalization and turnover ratio). Furthermore, these studies tend to provide threshold effects where natural resource revenues tend to be negative at its initial estimates and thereafter positive when it is interacted with political institutions.

In this study, we define ownership structure of oil revenues as the act of distributing oil revenues for investment in the domestic economy by both government and the private sector (International oil companies). There is scanty literature on ownership structure of oil wealth. There are few studies that have examined how ownership structure of oil wealth affect economic growth (e.g., Khanna 2017; Mohammed, Karimu, Fiador & Abor 2020), but none have considered the likely impact on the financial system, which this study considers. Specifically, Khanna (2017) finds that where the ownership of oil resource is controlled by the state, oil abundance reduces growth when the institutions are poor and growth is enhanced when institutional quality is strengthened. However, under private ownership, growth appreciate when institutions are poor but retards economic growth when institutions are strengthened.

In a related study, Mohammed et al. (2020) note that government investment of oil revenues reduces economic growth when domestic financial markets are weak but strengthen economic growth when financial markets are strong. They also find private investment of oil revenues to increase economic growth with weak domestic financial markets, but growth is retarded when domestic financial markets are developed.

The ownership structure of oil revenue provides a solid foundation under which oil funds can properly be managed. Therefore, disaggregating oil revenues into government investment and

private investment have the tendency to foster financial development when political institutions are developed.

The study makes three key contributions to the literature. First, it quantitatively examines oil revenue management and financial development. Previous studies (e.g., Dogan, et al. 2020) focus on oil rent (revenue) as an aggregate without separating the share of the revenue that is invested by government and that invested by private international oil firms. Furthermore, how these different investments (government and private sector) impact financialisation.

Second, the study contributes to the literature by being the first to consider the heterogeneous impact of oil revenues on different aspects of financial system development (depth, access and efficiency).

Thirdly, it contributes to the literature by taking a comprehensive analysis of the management of oil revenue and its influence on the financial system (both financial markets and institutions) than any prior study, and incorporating the role of political institutions in this comprehensive approach, which has not been considered by previous studies such as Bhattacharyya & Hodler (2014), Dwumfour & Ntow-Gyamfi (2018) and Khan et al. (2020).

The focus of this study is to investigate the ownership structure of oil revenue on different aspects of financial system development, thus, the depth, access, and the efficiency of financial system development. We consider these important dimensions of financial system development because prior studies focus only on the depth while neglecting access and efficiency of either the banking sector or stock market development. Even though the depth of the banking sector or stock market development is important, access and efficiency are needed to enable the financial markets and institutions to be resilient and stable. Therefore, oil revenues

invested by government and private oil companies on the depth, access and efficiency of financial markets and institutions are essential in promoting financial development in oil-producing countries.

In addressing the study objectives, the study utilise data from 82 oil-producing countries for the period 1990-2015 across the globe. The study first employs a panel vector autoregressive (PVAR) model to estimate the coefficient of oil rent on government investment and private investment in order to compute the variable for ownership structure of oil revenues. Thus, oil revenues invested by the government and the private sector (IOCs). Next, we use a fixed effects and two-step GMM models to estimate the effect of ownership structure of oil revenues on financial markets and institutions development by considering the role of political institutions.

Finding from the study shows that government investment has a negative influence on financial institutions' efficiency when political institutions are weak and enhances financial institutions' efficiency when the quality of political institutions are strong. We also find that private investment of oil revenues on financial institutions' depth and access are negative when the quality of political institution is weak and become strengthened when the quality of political institution gets stronger. Finally, we find that private investment of oil revenue improves with financial markets' depth when political institution is weak, and retards financial markets' depth when political institution is strong in the developing countries subsample.

The rest of the study is structured as follows. Section 2 provides the stylize facts on oil revenues, finance and political institutions. The theoretical and empirical discussion of the literature is fitted in section 3. Furthermore, section 4 details with the study methods, which include data sources, variables used and the empirical specification of the econometric models.

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Section 5 presents the results and discussion of the findings whilst section 6 draws the conclusion and policy implications for the study.

2. Stylize Facts on Oil Revenues, Finance and Political Institutions

This section discusses oil revenues, financial markets development as well as political institutions. Data from the period 1990-2015 for all the variable are averaged on five-year basis. Figure 2.1 shows the trends of financial institutions and oil revenues (depth, access and efficiency), figure 2.2 indicates the trends of financial markets and oil revenues whilst figure 2.3 shows oil revenues and political institutions trends.
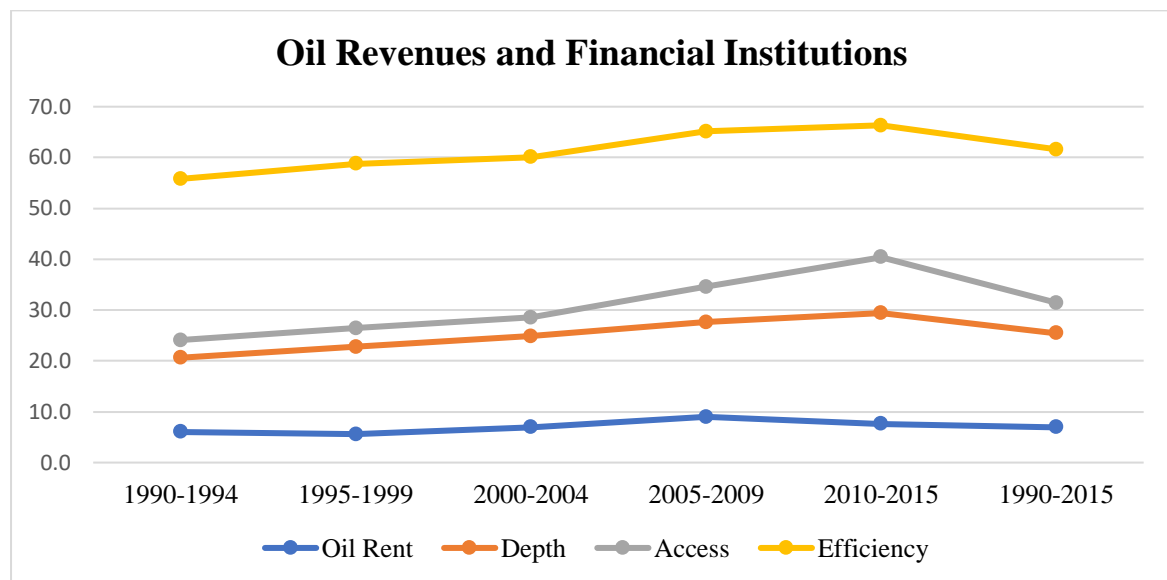

Figure 2.1: Oil Revenues and Financial Institutions
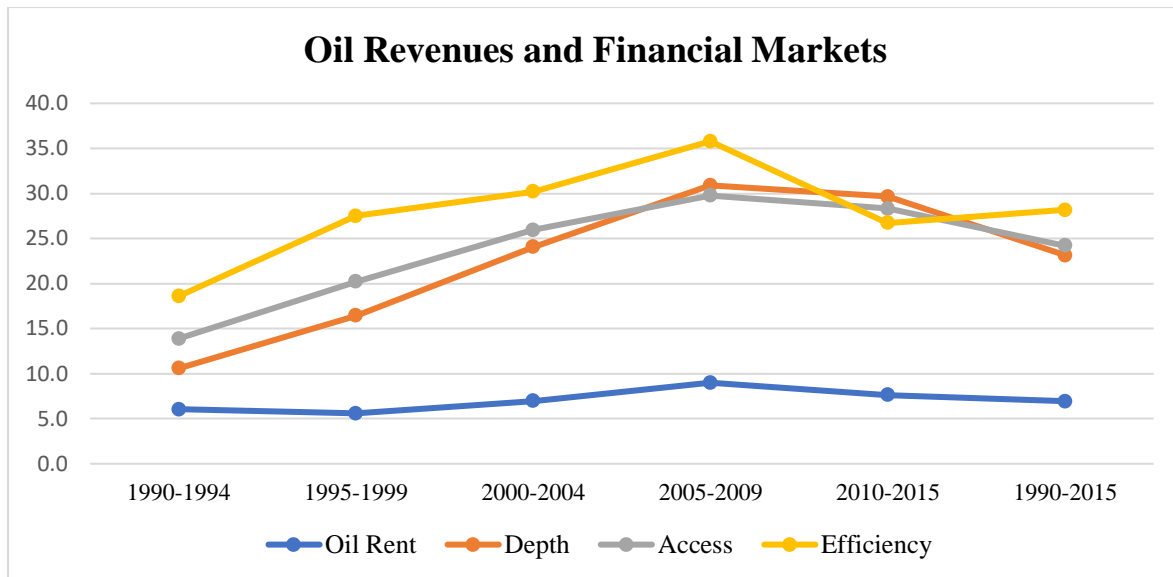
Figure 2.2: Oil Revenues and Financial Markets
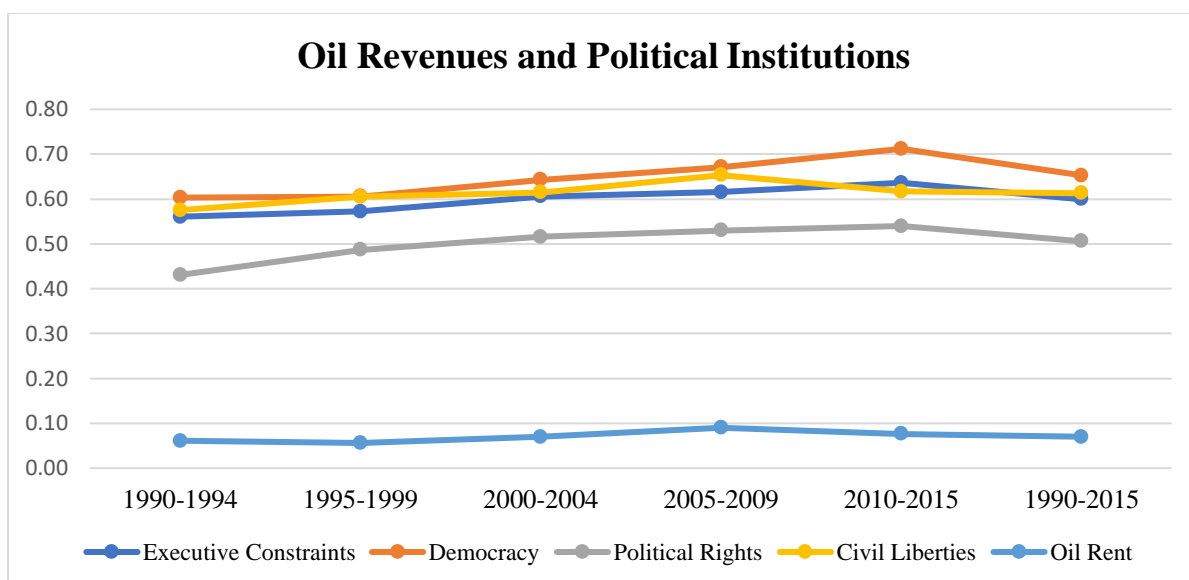
Figure 2.3: Oil Revenues and Political Institutions

The figure 2.1 above suggests that net oil revenues, in the early 1990s, were low with a corresponding low depth, access and efficiency of financial institutions. However, a slight dip in oil revenue shows marginal increase in financial institutions indicators. Furthermore, while we observed improvement in the oil revenues over the period 2000 to 2004 and 2005 to 2009, there was correspondingly an upward surge in financial institutions depth, access and efficiency. Although, the period 2010-2015 shows a marginal drop in oil revenues, the

corresponding increase in depth, access and efficiency of financial institutions hits its record high. Between the period 2010-2013 oil prices were higher in the global energy market but a sharp decline occurred in 2014-2015 indicating greater volatilities in oil revenues. The lagged effect of oil revenues surged in between 2010 and 2012 might have accounted for the rise in financial institutions indicators, respectively. However, overall, on average between 1990-2015 oil revenues recorded 6.9 percent whilst that of depth, access and efficiency of financial institutions averaged 25.43 percent, 31.39 percent and 61.6 percent, respectively.

Focusing on figure 2.2; the trends show that within the period 1990-1994, oil revenues recorded an average of 6 percent of GDP with financial markets depth recording 10.59 percent, access 13.9 percent and efficiency 18.61 percent all as a percentage of GDP. The period 1995-1999 saw a marginal slump in the average oil revenue by 0.04 percent, but as shown in figure 2 above, financial markets indicators improved marginally. The oil revenues moved slightly higher to 7 percent between the period 2000-2004 whilst the financial markets indicators accordingly improved by 9.51 percent for depth, 5.75 percent for access and efficiency by 2.7 percent. The increase in the depth of the financial markets was higher than access and efficiency because as oil revenues to international oil companies improve, they find ways to diversify their portfolio by investing on the stock market and related corporate and government bonds.

Furthermore, the period between 2005 and 2009 recorded the highest average net oil revenues of 9 percent. Financial markets continue to grow, with a depth of financial markets dominating access as seen in figure 2. Even though, the global financial crises occurred in this period, it appears that oil-producing countries did not really experience the bubbles in the housing

markets. Efficiency of financial markets continued to be higher. The period 2010-2015 witnessed a slumped in net oil revenues by 1.4 percent from the previous average. In this instance, depth of financial markets dominates that of access and efficiency. Relatedly, efficiency of financial markets in this period hit all-time record low of 26.71 percent over a 21-year period. This significant reduction in efficiency of the financial markets might have been trigged by the instability of the financial crises between 2007-2009 where the lagged effect hits succeeding years. Similarly, global oil price crush began in 2015, lowering revenues to oil-producing countries that reduced financing for budgets. This tight fiscal space propelled most oil-rich countries that relied on oil money to resort to borrowing to finance their budget, throwing their economies into debt-traps. This made some of the oil-producing countries to resort to issuing more domestic bonds and Eurobonds to finance the deficit from their budgets. This enables the depth of the financial markets to increase thereby lowering the efficiency over the period. On average, over the period 1990-2015 puts net oil revenues at nearly 7 percent of GDP and efficiency of financial markets as highest followed by access and depth of financial markets.

Figure 2.3, illustrates the political institutions and oil revenues. The political institutions indicators are executive constraints, democracy, political rights and civil liberties taken from Polity IV project and Freedom House. It is argued that appropriate management of oil revenues is anchored on the quality of political institutions. Where, political institution is strengthened, revenues from oil are put to good use. The strong institutions are able to put the government in check and international oil companies as well. The period between 1990-1994 presents an average of 6 percent of net oil revenues, with political rights averaging 43 percent, executive constraints 56 percent, civil liberties 58 percent and democracy 60 percent. All these average values are low and this might account for the mismanagement of oil revenues. As net oil

revenues slumped in the period 1995-1999, political institutions indicators accordingly did not really improve maintaining the inability of governments to properly utilize oil revenues. There could still be rent-seeking behaviour of political actors where contracts signed between IOCs and governments are shrouded in secrecy (Eregha & Mesagan, 2016).

Fronting and beneficial ownerships by some governments appointees as well as family and friends shrink revenue inflows in most oil-producing countries. The lack of transparency in oil-contracts negatively affects revenue generated by oil-rich countries. Accordingly, as net oil revenues continue to increase between the period 2005-2009, political institutions indicators marginally improved. Furthermore, within the period 2010-2015 democracy, improved among oil-producing countries whilst we observe a slight fall in net oil revenues, executive constraints marginally improved, civil liberties and political rights slightly decreased. On average, for the period 1990-2015, net oil revenue was at least 7 percent of GDP whilst political institutions indicators remained relatively average.

3.1 Theoretical and Empirical Review

3.1.1   Theoretical Framework

The study is built on two theories, the endowment theory of financial development and capital scarcity and risk premium theory. First, the endowment theory of financial development argues that the quality of institutions encountered by colonizers is influenced by resource endowment and the disease environment of countries encountered by the colonizers. Extractive industries are erected in countries with endowed natural resources but with inherited disease environment. These countries are characterised by weak property rights and contract enforcement, which negatively affect financial development. Beck et al. (2003) argue that colonizers will not create institutions that favour free competitive and financial markets in extractive environment

because competitive markets may threaten the position of the extractors. In contrast with settler colonies, the colonizers are much likely to create institutions that protect property rights and foster financial development.

The differences in the endowment determines the nature of institutional arrangements in the respective colonies and this has long-lasting repercussions on those colonies long after the colonizers have left. The weak nature of institutions created in the extractive environment colonies has made post-colonial leaders to exploit the weak institutions created by the colonizers to their advantage and profit especially in countries with endowed natural resources. The case of DR Congo, Congo, Gabon, Nigeria and Latin America can be mentioned. For instance, in the case of DR Congo (formerly Zaire), the Europeans gave them independence and instead of the new rulers creating strong institutions to protect private properties they resorted into extracting the natural resource for their personal benefit.

To ensure sustainable management of natural resource revenues, clearly delineating revenues into ownership structure (government vs. private) is key. This is because government opts to ensure that its shares of natural resources are well-utilized while ensuring that private sector (IOCs) contractual agreements on oil sector are enforceable. Property rights and contractual agreement are enforceable in strong political institutional environments. Bhattacharyya (2013) summarized this succinctly by arguing that weak contracting institution possess low financial development whilst states with strong institutions have well-developed financial markets.

Second, the "capital scarcity and risk premium theory" supports how a windfall from oil revenues are to be managed by countries with limited infrastructure and countries with abundant infrastructure. van der Ploeg and Venables (2011) argue that countries with limited infrastructure and higher debt component can borrow with a world interest rate plus a risk premium. They opined that such countries with natural resource revenues should use the

revenues to accelerate the growth in consumption towards long-run value rather than increasing their investment on SWFs and vice versa. The conclusion drawn from this theory is that in countries with scarcity of infrastructure, domestic investment should be geared towards scaling-up their infrastructure rather than accumulating foreign assets such as sovereign wealth funds. The focus of this study is converting natural capital to physical capital, scaling-up infrastructure and how the financial sector benefits or aids physical capital investment. Therefore, government investment and private investment of oil revenue will support financial markets and institutions depth, access and efficiency in oil-producing countries by considering the role political institutions play (Bhattacharyya, 2013).

3.2 Empirical Literature

There have been a lot of empirical studies on the resource curse thesis, which is more broadly focused on the relationship between natural resource abundance and economic growth. Recently, however, the resource curse thesis has been extended to financial development. This helps in further understanding why some resource-rich countries grow and develop less relative to some resource-poor countries. Finally, the section examines if there is a resource curse in financial markets and institutions development and the role of political institutions. In this section, we present and discuss studies focused on the recent extensions of the resource curse thesis to financial development by focusing on ownership structure of oil revenues and the role political institutions play in mitigating any negative impact ownership structure may have financial development.

3.2.1   Natural Resource Revenue and Financial Development

To investigate the link between natural resources and financial development, several empirical studies have been drawn (Kurronen 2015; Dwumfour & Ntow-Gyamfi 2018; Asif et al. 2020; Khan et al. 2020; Dogan et al. 2020; Mlachila and Ouedraogo 2020; Jiang et al. 2021; Umar et

al. 2021). Specifically, Kurronen (2015) reveal that banking sector tends to be smaller but the use of market-based financing is more common in resource-dependent economies. The study concludes that while the financial sector is formed according to the needs of the resource sector it might be unfavourable to businesses that tend to reinforce the resource-curse. Dwumfour & Ntow-Gyamfi (2018) discover that resource curse on financial development is seen in lower and middle-income countries but not in the North African region. Beck (2012) show that, liquid banks in natural resource-rich countries offer fewer loans. The study shows that these firms use less external finance and a smaller proportion of them use bank loans even though they have similar demand for bank credit as compared to their counterparts elsewhere. The author argues that this could be due to credit constraints, which might bring about the financial curse.

Furthermore, Asif et al. (2020) find positive relationship between natural resource and financial development in the short run whilst a negative relationship is observed in the long-run in Pakistan. Khan et al. (2020) also find that natural resource undermines financial development in 87 emerging countries. In using the nine indices of financial development created by IMF, Dogan et al. (2020) find a negative relationship between natural resources and financialisation. They observed that the curse is more pronounced in financial markets than financial institutions in 8 oil-rich countries. Mlachila and Ouedraogo (2020) find strong evidence of financial curse in commodity prices shocks in 68 commodity-rich developing countries. Canh and Thong (2020) document that increase in natural resource rent has positive effect on financial markets depth but with a negative effect on financial institutions access and efficiency. Jiang et al. (2021) find that financial development is negatively affected by resource curse in China. Umar et al. (2021) find that during periods of oil booms banking efficiency declines, credit infection worsens and profitability of default surge. Their findings validate natural resource curse and explain why countries with higher natural resource experience financial development curse. On the basis of these empirical literature, the following hypothesis 1 has been developed:

H$_1$: Government and private investment of oil revenues negatively impact on financial institutions and markets development in oil-producing countries.

3.2.2   Natural Resource Revenue, Political Institutions and Financial Development

This section looks at the literature in two ways. First, the link between political institutions and financial markets. Second, the interaction between natural resource and political institutions on financial markets and institutions development.

First, a number of studies have underscored the link between institutions and financial development (see Atkinson & Hamilton 2003; Iimi 2007; Herger, et al., 2008; Huang 2010; Mavrotas, et al., 2011; Adams et al. 2019a; 19b). For instance, Atkinson and Hamilton (2003) document that in a situation where weak institutions exist, natural resource abundance tends to hurt development when the government is allowed to use the resources for consumption instead of investment, especially in countries with low levels of genuine savings. Also, Iimi (2007) notes that powerful elite use resource windfall for their personal benefit instead of using it for infrastructural development for the benefit of all. This curse could be felt more in public institutional management as compared to private institutional management when state institutions get stronger. In a related study, Herger, et al., (2008) find that through political institutions there could be an effect of colonial history on financial development. Huang (2010) notes that political institutions exert a positive effect on financial development whilst Mavrotas, et al., (2011) opine that natural resource revenue can be a curse or blessing depending on the level of institutions a resource-rich country has. Adams et al. (2019a) document that strong political institutions support petroleum revenue management policies in Ghana. Adams et al. (2019b) observe oil and gas MNCs as agents of globalisation who promotes the resource curse.

The second wave of the literature looks at the interaction between natural resource revenue and political institutions on financial markets development (see Bhattacharyya & Hodler 2014; Dwumfour & Ntow-Gyamfi 2018; Khan et al. 2020; Kassouri et al. 2020; Mlachila &

Ouedraogo 2020). For instance, Bhattacharyya and Hodler (2014) show that the extent to which resource revenue curse could be averted through the quality of political institutions. They find that strong political institutions can lessen the degree of resource revenue-curse on financial development in democratic countries. Dwumfour and Ntow-Gyamfi (2018) document that without proper political stability in North Africa, resource revenues will place a curse on financial development. They find that in the SSA region, institutional quality variables such as corruption, political and voice & accountability have a significant negative effect on financial development. In effect, they find that strong institutions check corruption, reduces credit provided to the private sector whilst proper regulatory quality helps to improve credit provided to the private sector. Also, Khan et al. (2020) note that institutional quality has a positive effect on financial development and help to turn the natural resource curse into a blessing in emerging and developing countries. Similarly, Kassouri et al. (2020) document that proper democratic credentials are able to mitigate financial curse in oil-exporting countries. Finally, Mlachila and Ouedraogo (2020) show that the financial curse can be mitigated through the quality of governance. On the basis of these empirical literature, the following hypothesis 2 has been developed.

H_2: The negative impact of government and private investment of oil revenues on financial institutions and markets development in oil-producing countries is mitigated by the quality of political institutions.

In summary, the literature has highlighted the important need for natural resource revenues on financial development. Whilst some literature document positive relationship between natural resource and financial development, others find a negative relationship depicting natural resource financial curse hypothesis. Similarly, the impact of political institutions on financial development has also been mixed with some studies depicting a blessing whilst other depicts

a curse. Finally, the interaction between natural resources and political institutions on financial development show that at higher level of political institutions the curse on natural resource is dissipated. One interesting issue which has been understudied is how natural resource management affect financial development. Finally, the moderating role of political institutions on natural resource management on financial development in oil-producing countries. Specifically, this study focuses on government investment of oil revenues and private investment of oil revenues and their interaction with political institutions on financial development. This is a new issue that had received less attention in the literature.

4.1 Methodology

4.1.1   Data and Variables

The panel for this study consists of a cross-sectional dimension of 82 oil-producing countries with data covering the period 1990-2015. The data is gathered from several sources, which include International Monetary Fund (IMF, 2017) Investment and Capital Stock Dataset, 1960-2015. This provides data for government investment and private investments of fixed capital formation. Oil rent and other control variables data is obtained from World Development Indicators (WDIs) of the World Bank. The financial markets and institutions data are obtained from an Index of financial development proposed by Svirydzenka (2016) on a paper entitled "Introducing a New Broad-based Index of Financial Development" and Sahay et al. (2015). These papers provide detailed methodology of how the financial development index (depth, access and efficiency) are constructed for about 183 countries in a less developed, emerging and developed financial markets for the period 1980 to 2015. Political institutions data are obtained from the Polity IV database and Freedom House. The financial openness data is obtained from Chinn and Ito (2008) measure of capital accounts openness as our indicator of financial openness.

4.1.2 Financial Institutions and Markets

Sahay et al. (2015) and Svirydzenka (2016) provide broad measures of financial development, which provides nine sets of variables to capture financial development for 183 countries. These measures are much broader than the traditional measures of financial development such as credit to the private sector as a percentage of GDP and stock market capitalization as a percentage of GDP. In this study, six broad measures of financial development are used (Financial Institutions and Financial Markets). They are discussed in detail below:

4.1.3 Financial Institutions

This section provides the detail composition of the components of the financial institutions' variables.

- **Depth:** The composition of financial institutions depth include; Private -sector credit (% of GDP), Pension funds' assets (% of GDP), Mutual funds' assets (% of GDP) and Insurance premiums, both for life and non-life (% of GDP).

- **Access:** The access for financial institutions is composed of bank branches (commercial banks) per 100,000 adults and ATMs, per 100,000 adults. These measures are only limited to banking institutions because data for other financial institutions are not available.

- **Efficiency:** These measures are limited to banks. They comprise of net interest margin, lending-deposits spread, and non-interest income to total income, the overhead cost to total assets, return on assets and return on equity.

4.1.4 Financial Markets

The information below provides the detail composition of the financial markets' variables.

- **Depth:** The depth of the financial markets captures the following. Stock market capitalization to GDP, stock market traded to GDP, International debt securities government (% of GDP), international debt securities of nonfinancial corporations (% of GDP) and total debt securities of financial corporations (% of GDP).

- **Access:** Percentage of market capitalization outside of the top 10 largest companies and a total number of issuers debt (domestic and external, nonfinancial corporations, and financial corporations).

- **Efficiency:** Stock market turnover ratio (stocks traded/ capitalization). This is a measure of the liquidity of the stock market.

4.1.5 Ownership Structure of Oil Revenues

The ownership structure of oil revenue is the share of government investment of oil revenues and the share of private investment of oil revenues. This is computed using data for oil rent and fixed capital formation for government investment and private investments as well as other control variables such as inflation and GDP growth rate. According to van der Ploeg (2011), the rent of a commodity is defined as the economic profit accruing from paying out all the factors of production and considering the opportunity cost of production, essentially above the marginal costs. Inflow of oil revenues increase the liquidity position of financial institutions and markets thereby making more funds available for proper financial intermediation (Beck, 2012). This in effect can facilitate the development of the financial institutions and markets development. Detail computation of these variables are discussed in section 3.2 below.

4.1.6   Political Institutions

Political institutions are those institutions that create, enforce and apply laws within a country. They include the executive, legislature, judiciary, bureaucracy, forms of representation, the electoral process, pressure groups, political parties etc. This study employs four political institutions measures discussed below:

- **Executive Constraints:** This is the extent to which the executive arm of government has limitations due to checks and balances from parliament, judiciary and civil society organizations. This means that in countries with better checks and balances, the government cannot encroach state institutions that are supposed to help with the management of oil revenues. We obtain the data from Polity IV index by Marshall, Jaggers and Gur (2019), which ranges between 1 and 7 with lower values juxtaposing weak executive constraints "less limitation" on the chief executive officer (President) in year $t - 1$ and higher values imposing strong executive constraints "substantial limitations" on the chief executive officer in year $t - 1$. We rescale it to lie between 0 and 1 with values below 0.5 being weak executive constraint, values between 0.5 and below 0.8 as moderate executive constraint and values above 0.8 being strong executive constraints.

- **Democracy:** Democracy is the extent to which citizens have the freedom to freely choose their leaders and participate actively in political activities. The data is taken from Polity2 index, which range between -10 and 10 and takes negative values for non-democratic governments and positive values for democratic governments. This is rescaled between 0 and 1, with -10 for 0 values and +10 for 1. This is obtained from Polity IV project by Marshall et al. (2019).

- **Political Rights:** This gives the citizens the right to participate in political activities such as exercising their franchise, holding public office and other political activities. This data is obtained from Freedom House. It is coded as 1 for all values ranging between 1-3 and coded as 0 for values from 4-7. Smaller values of political rights denote greater rights while larger values denote worse political rights.

- **Civil Liberties:** This refers to freedom of speech that is guaranteed to citizens from arbitrary government interference especially by denial of government power. These are usually codified in countries constitutions. It is obtained from Freedom House. It ranges from 1-7 with smaller values depicting good civil liberties and higher values depicting bad civil liberties. In this study, it is coded as 1-3 as 1 and 4-7 as 0. The essence of this choice is that countries with lower values are considered to have strong civil liberties and countries with higher values are considered to have poor civil liberties.

4.1.7 Control Variables

Other factors account for financial developments. Some of these factors include income, education, inflation, foreign direct investment and financial openness. GDP per capita is used to control for the income level of countries since income is an important determinant of financial development (Kurronen, 2015). Countries with higher income levels are more likely to have developed financial markets through improved financial access, efficiency and depth of the financial markets. We use secondary enrolment to indicate the level of education as more educated people understand complex financial markets issues and participate in financial markets than less educated ones (Bhattacharyya & Hodler, 2014; Kurronen, 2015; Dwumfour & Ntow-Gyamfi, 2018). Inflation describes the consumer price index and interest rate for the stability of the economy; and foreign direct investment represents foreign participation of companies in the local economy that facilitates financial markets developments (Kurronen,

2015). The financial openness measure is taking from Chinn and Ito (2008). Financial openness liberalizes the financial sector thereby enhancing liquidity inflow leading to the growth of the financial institutions and markets development. The index measures the degree of a country's capital account openness computed from taking the first principal component of four dummy variables that measure the existence of multiple exchange rates, restrictions on current account and capital account transactions, and requirement for the surrender of export proceeds. Low value of the index indicates low openness and a high value implies high financial openness.

4.2 Computation of Ownership Structure of Oil Revenues

This section provides insights on how the ownership structure of oil revenues are derived. The ownership structure includes, government investment of oil revenues (GOR) and private investment of oil revenues (POR). This study contributes by deriving a data series using existing oil rent data and government investment (health, education and infrastructure) and private investment (fixed capital formation) data on fixed capital formation. This ownership structure forms a physical capital management of oil fines since we are converting a natural capital to a physical capital. The focus of the ownership goes beyond controlling rights of government and IOCs to focus more on proportion of government investment of oil wealth and private investment of oil wealth in oil producing countries.

We use a Panel Vector Autoregressive (PVAR) model to predict the ownership structure of oil revenues for government investments and private investments. This model allows us to carry out casual interpretations of the variables, solve endogeneity and heterogeneity problems. The general, PVAR model is written compactly as follows:

$$y_{it} = \sum_{t=1}^{n} \beta_t y_{it-1} + \mu_{it} \qquad (Eq. 1)$$

where y is k*1 vector of k variables, β is a k*k vector of parameters to be estimated and μ_{it} is a composite term that is made up of time fixed effects (v_t), unobserved individual effect (γ_i) and random error term (ε_{it}), t is time and i is individual unit, which in this study represents countries. The general PVAR in equation (Eq.1) in specific terms for the predictions are expressed as follow;

$$GI_{it} = \sum_{t=1}^{n} \alpha_{gt} GI_{it-1} + \sum_{t=1}^{n} \alpha_{pt} PI_{it-1} + \sum_{t=1}^{n} \alpha_{Ot} OilRent_{it-1} + \alpha_f inflat_{it} + \alpha_{GD} GDP_{it} + \mu_{it}^{GI} \qquad (Eq.2)$$

$$PI_{it} = \sum_{t=1}^{n} \beta_{gt} GI_{it-1} + \sum_{t=1}^{n} \beta_{pt} PI_{it-1} + \sum_{t=1}^{n} \beta_{Ot} OilRent_{it-1} + \beta_f inflat_{it} + \beta_{GD} GDP_{it} + \mu_{it}^{PI} \qquad (Eq.3)$$

$$OilReent_{it} = \sum_{t=1}^{n} \theta_{gt} GI_{it-1} + \sum_{t=1}^{n} \theta_{pt} PI_{it-1} + \sum_{t=1}^{n} \theta_{Ot} OilRent_{it-1} + \theta_f inflat_{it} + \theta_{GD} GDP_{it} + \mu_{it}^{Oil} \quad (Eq.4)$$

The three equations (2, 3 and 4) are jointly estimated, where GI denotes government investment, PI is private investment, OilRent represents the oil rent, inflat is inflation and GDP is real GDP per capita. The betas (α) are the coefficients to be estimated in the government investment equation, alphas (β) are coefficients to be estimated in the private investment equation and thetas (θ) are coefficients to be estimated from the oil rent equation (4). Inflation is used to proxy macroeconomic stability such as the role of interest rates on the investment climate.

Based on the coefficient estimate for oil rent (α_O) from equation (2), we determine the series for the share of government investment of the oil revenues due to oil rent for each country by multiplying the oil rent coefficient (α_O) by government investments series. Similarly, in the case of the share of private investment of the oil revenues, the computation is based on the coefficient estimate for oil rent (β_O) from equation (3) multiplied by private investment series for each country.

This measure is more appropriate because we fit a causal model of investment that allows for a dynamic structure in the estimation process as suggested by the investment theory. Moreover, it is modelled as a system where the key variables in the model (government investment, private investment and oil rent are considered endogenous); and unobserved heterogeneity is considered in the estimation via both country fixed effects and time fixed effects. Furthermore, it accounted for macroeconomic stability via inflation, that indirectly considers interest rate effect on investment. Given the system approach, the causal framework and the fact that it controls for the key factors for investment, the prediction of investment from such a model based on oil rent provides a reliable estimate of investment (government and private), where all key derivers are held constant. The predicted proportions from PVAR are used as proxies for the real shares of oil revenue invested by the government and by the private sector in our second stage of estimation on the effect of oil revenues on financial institutions and markets development conditional on political institutions.

In line with Liaqat (2019) we estimate the PVAR model with generalized method of moment (GMM) by using the lagged vales of the regressors as instruments. After that, the impulse response functions (IRF) are computed from the estimated PVAR results in equations 2-3 above. Th monte carlo stimulation is used to compute the IRFs confidence intervals. Besides, the key variables of interest such as oil rent, government investment and private investment, we also include exogenous variables such as inflation and gross domestic product rate in the model. We use Cholesky ordering in the estimation of the equations as well as bootstrapping the model by one thousand (1000) replications (Lof & Malinen, 2014). This is motivated by the fact that oil revenues might be influenced by both government and private investment in the upstream oil industry which leads to the discovering of new oil wells thereby increasing in future government and private share of oil revenues. Usually, the oil-industry is capital intensive, so more of the financing comes from the private sector especially where there is

production sharing agreement contract between the owner of the resource and the IOCs. Figure 4.1 below shows the impulse response function computed from the estimated PVAR.
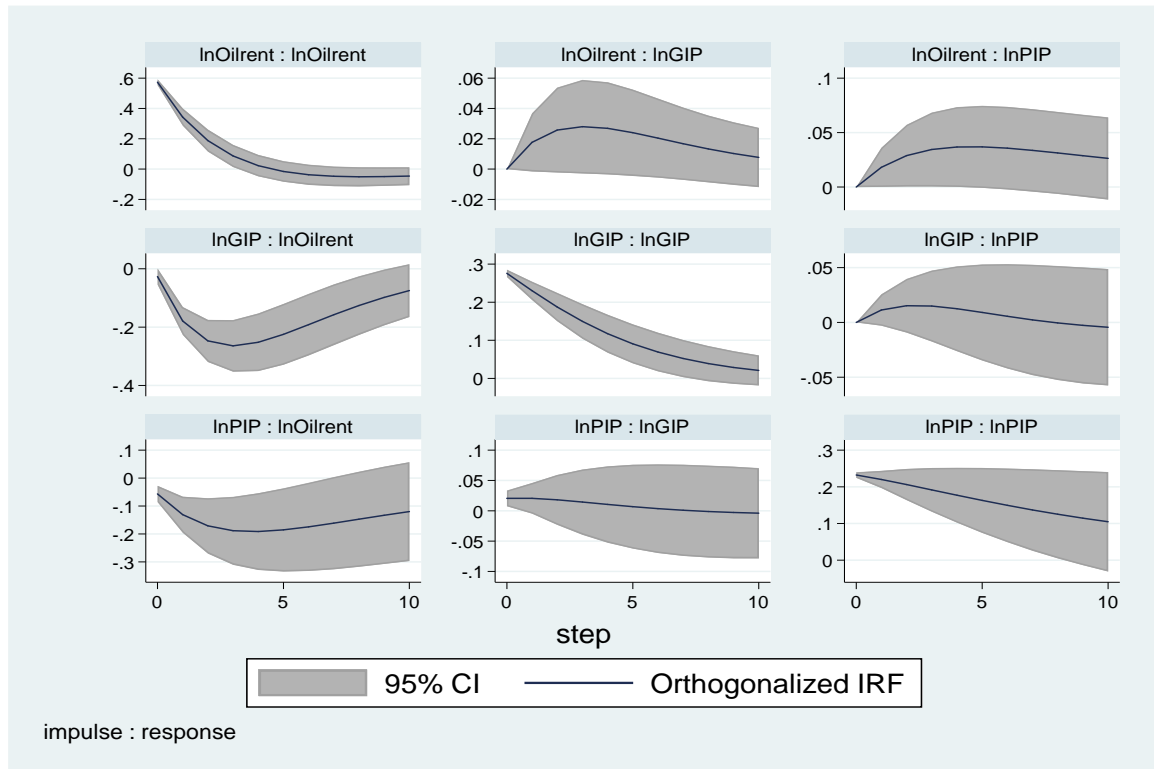
Figure 4.1: Impulse response functions (IRF) computed from estimated PVAR.

The results of the IRF suggests that oil rent due to government investment is approximately 0.031 which occurs a around the second-year of oil extraction. Similarly, the private investment occurs at year-two with a value of 0.032 at the peak level of the orthogonal IRF at the top right conner of the graph. These coefficients were used respectively to aid in the constructions of the ownership structure of the oil revenues variables.

Furthermore, Table A2 presents the results of the PVAR model whilst the stability test is presented in Table A3 of the appendix. The diagnostics of the preliminary (PVAR) results are discussed here whilst the full results are shown in the appendix. First, concerning the PVAR model fit, we perform the Hansen-J test for over-identification, which is more of a specification test to determine if the over-identifying restrictions are valid. The test results reported in Table

A2 in the appendix suggests that our model fit the data generation process (DGP) and therefore, not misspecified. Second, we test for the stability of the model and results are reported in Table A3 which indicates that the estimated PVAR model is stable since eigenvalues are all less than 1 as suggested by Hamilton (1994) and Lütkepohl (2005) for such a stability test.

4.3 Empirical Strategy

This is the second stage of our estimation; we use the predicted data on ownership structure of oil revenues (government vs. private) to estimate the direct effect on financial markets and institutions conditional on the level of political institutions. We specify our empirical model by following Bhattacharyya and Hodler (2014); Kurronen (2015) and Khanna (2017). This is shown below:

$$FIMD_{it} = \alpha_i + \theta_t + \delta_1 \ln OSOIL_{it} + \delta_2 INST_{it-1} + \alpha_3 \ln OSOIL_{it} * INST_{it-1} + \Lambda X'_{it} + \varepsilon_{it} \qquad (Eq.5)$$

In the model, $FIMD_{it}$ represents financial institutions and markets development. α_i represents the country-specific fixed effect, θ_t is a year-specific fixed effect. These fixed effects are included to account for both unobserved country and time heterogeneities, respectively. Secondly, country fixed effects are to control for time-invariant factors such as initial endowments, legal origins and social capital (Bhattacharyya & Hodler, 2014). This is because they are important in explaining the institutional origins of the countries. $\ln OSOIL_{it}$ represents the ownership structure of oil revenues variables decomposed into the share of government investment of oil revenue GOR_{it} and the share of private investment of oil revenue POR_{it} in the domestic economy, $INST_{it-1}$ is the political institutions variables (executive constraints, democracy, political rights and civil liberties). The lags of the political institutions variables were taking to carter for endogeneity that might occur as a result of implementing government policies that affect both the government and the private sector (Khanna, 2017). Also, according to Khanna, (2017) we lagged each of the explanatory variables that are suspected to be

indigenous in the model thereby eliminating the problem of endogeneity in our fixed effect model. X'_{it} is the vector of control variables such as GDP per capita, inflation, education, foreign direct investment and financial openness relevant for the study (see Bhattacharyya & Hodler, 2014; Kurronen, 2015; Dwumfour & Ntow-Gyamfi, 2018). ε_{it} is the idiosyncratic error term. Furthermore, we estimate a two-step system GMM which is reported in appendix A4 and A5 to further address the issue of endogeneity in our model. Ullah et al. (2018), reported that differences in the results reported using OLS, Fixed Effects and GMM could be due to endogeneity issues. We estimate the model with a robust standard error to correct for autocorrelation and heteroskedasticity.

From equation (5) above, the main variable of interest is derived by taking the partial derivative of $FIMD_{it}$ with respect to $OSOIL_{it}$. This is shown below:

$$\frac{\partial FIMD_{it}}{\partial lnOSOIL_{it}} = \delta_1 + \delta_3 * lnINST_{it-1} \qquad (Eq.\,6)$$

The implications of Eq. (6) means that whether the effect of government share or private share of the investment of oil revenues is positive, negative or zero depends on the magnitude of the coefficients of interest, thus, $\delta_1\ and\ \delta_3$ as well as the level of the political institutions of each oil-producing country. To put this into another perspective, the extent to which government or the IOCs can invest oil-revenues into productive sectors of the economy to enhance financial markets and institutions development depends on the level of political institutions of the country.

5   Results and Discussion

This section presents the results of the study. First, we provide descriptive statistics. Second, we examine the effect of ownership structure of oil revenues on financial institutions and markets development in the light of political institutions. Third, we provide the robustness of the study with alternative measures of political institutions (democracy, political rights and civil liberties).

5.1.1   Summary Statistics

This section provides a discussion of the descriptive statistics of the study. Table 5.1[1] below shows the detail summary of statistics of the study. The summary statistics reveal that on the average financial institution's depth recorded 25.4 percent, access on average is 31.4 percent and efficiency is the highest, which recorded an average of 61.6 percent. The greater percentage points reported for the efficiency is due to the greater number of developing countries in the sample. In developing countries, banks and other financial institutions charge huge interest, which increases their profit margins thereby making them much efficient. Financial markets depth records an average of 23.1percent, access records 24.2 per cent and efficiency records an average of 28.2 percent. On average, efficiency records the highest, implying that stock markets are relatively much liquid thereby making the conversion of stocks into cash much easier.

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[1] The correlation matrix for the variables in the study was carried out and it generally shows that none of the independent variables exhibits a high degree of multicollinearity. Also, variance inflation factor (VIF) was estimated and it satisfy the rule of thumb of no variable being greater than 10. Also, 1st and 2nd Generation Unit root test without and with cross-sectional dependence has been presented in appendix A1. To conserve space, the results of correlation matrix and VIF are not reported but can be provided upon request.

Table: 5.1 Descriptive Statistics

Variable	Obs.	Mean	Std.Dev.	Min	Max
Financial Institutions					
Depth	2158	0.254	0.262	0.000	1.000
Access	2158	0.314	0.270	0.000	1.000
Efficiency	2158	0.616	0.185	0.000	0.913
Financial Markets					
Depth	2158	0.231	0.264	0.000	0.998
Access	2158	0.242	0.260	0.000	1.000
Efficiency	2158	0.282	0.337	0.000	1.000
Political Institutions					
Executive Constraint	2089	0.603	0.356	0.000	1.000
Political Rights	2158	0.506	0.500	0.000	1.000
Civil Liberty	2158	0.613	0.487	0.000	1.000
Democracy	2155	0.650	0.480	0.000	1.000
Ownership Structure of Oil					
Gov't Oil Revenue	2157	0.231	0.189	0.000	1.401
Private Oil Revenue	2156	0.801	0.433	0.016	4.192
Control Variables					
GDP per capita	2154	18650.18	21312.92	555.424	152000
Inflation	1918	1.755	1.466	-3.305	10.076
Schooling	1631	4.289	0.475	1.891	5.064
Foreign Direct Investment	1941	0.637	1.460	-10.571	5.087
Financial Openness	2070	0.273	1.603	-1.910	2.360

For the aspect of political institutions, executive constraints record an average of 0.603 units, political rights record an average of 0.506 and civil liberties record an average of 0.613. This means that on average most of the countries have moderate institutional qualities, since the range is between 0 and 1.

For oil revenues, the study records an average of 0.231 units for government share of the investment of the oil revenues. The private sector records a share of 0.801 units for its oil revenues. This means that the private sector receives a higher share of oil revenues than the government sector. This is because the private sector invests in the discovery of oil wells, exploration and drilling, which makes its share higher than the government whose revenues mainly comes from taxes, royalties, participation share, surface rentals etc., which are generally of a lower amount as compared to the main investors' share.

Similarly, GDP per capita (income) records an average of US$18,650.18 over the sample period. Inflation records an average of 1.755 units whilst education records an average school enrolment of 4.289 units for the sample period. Foreign direct investment records an average

of 63.7 percent of GDP implying that more foreigners participate in the domestic economy of oil-producing countries (Kurronen 2015). Finally, financial openness records an average of 0.273 units, which suggest that most of the countries fairly open up their economy for the free flow of funds.

5.1.2 Ownership Structure of Oil Revenues and Financial Institutions: The Role of Executive Constraints

This section reports result on the impact of oil revenues investment by government (GOR) and private (POR) sector on the development of financial institutions by considering the role of executive constraints. We present results for the full sample countries and for developing countries samples because the nature of the development of financial institutions in developing countries are generally low as compared to the developed countries. Therefore, results based on a sample that contain both maybe influenced by the proportion of developed countries in the sample. In developed countries like Japan and the United States of America, financial institutions and markets development are closed to 100 percent whilst some countries like Equatorial Guinea are far lower. Also, fixed effects model results are discussed whilst two-step system GMM results are reported in appendix A4. In general, we analyse the results by following the fixed effect model and using the GMM as robustness checks. In some cases, we find consistent in the results of the fixed effects and GMM, whilst the results differ in other cases. Overall, the results are in line with theoretical postulations.

In the full sample as reported in Table 5.2, the coefficient estimate on GOR is negative and significant for both depth and access of financial institutions. This means as government investment increases there is no corresponding growth in financial institutions depth and access. Put differently, government investment of oil revenues hurts the private sector access to credit and the broadening of financial services to all segments of the population

(Bhattacharyya & Hodler, 2014; Dogan et al. 2020). The implication is that the political elites could have been using the oil-money for their own benefits instead of using it for projects that can directly benefit the financial institutions (Ross, 2006; Iimi, 2007).

Furthermore, the results show that a significant investment of oil revenues by the government has a drag on financial institutions efficiency. Evidence from the model estimated reveals that private investment of oil revenues negatively correlates with depth and access of financial institutions. Thus, private investment of oil funds in the local economy does not have a direct effect in the productive sectors of the economy in such a way that it will translate into broadening of the financial institutions' depth and access within the domestic economy. The implication of this finding could be that because the oil-sector requires substantial initial capital for investment, most of the rent that accrues to the private sector are repatriated to the parent company for either distribution to shareholders or prospecting in new oil fields (Mohammed et al. 2020). This finding is consistent with Dogan et al. (2020), who note a significant negative impact of natural resource rent on financial institutions access and efficiency in 8 oil-rich countries.

We find executive constraints to be positive and significant for access and efficiency of financial institutions. This means that greater limitations on the powers of the chief executive officer (president) to act in a way that will drill the development of financial institutions can be curtailed. This result supports the finding of Huang (2010), Bhattacharyya and Hodler (2014) and Dwumfour and Ntow-Gyamfi (2018) who, collectively, note that political institutions play a major role in fostering financial development. It supports the endowment theory (Beck et al. 2003); Acemoglu and Johnson's (2005) and Bhattacharyya (2013) who argument that the quality of institutions matter in financial development.

Specifically, we find the interactive effect between government investment of oil revenues to be positive and significant for the efficiency of financial institutions. This suggests a threshold[2] effect of government revenue investment on the efficiency of financial institutions, where the threshold is driven by the level of executive constraints (the threshold effect is presented in figure 5.1). In countries with weak executive constraints, contracting and property rights institutions are likely to be weak. This will hurt the efficiency of financial institutions. The reverse is true in the case of limited executive constraint and how that influence the impact of government oil revenue investment on the efficiency of financial institutions. In particular, countries with strong executive constraints, the effect of government investment of the oil revenues is positive and negative for those with weak executive constraints. As regards to depth and access dimensions, the interactive effect is insignificant at any of the conventional significance levels. In the context of developing countries, similar qualitative results are observed for government investment of oil revenues (but the graph for the threshold effect is not reported but can be provided on request). This finding supports a large body of the empirical literature on the nexus between natural resources, institutions and financialisation (e.g., Canh & Thong 2020; Kassouri et al. 2020; Khan et al. 2020). The findings also support the theoretical argument by van der Ploeg and Venables (2011) for proper investment of oil windfall by natural resource rich-countries with capital scarcity.

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[2] Threshold effect in this study implies a significant interaction effect between executive constraint and ownership structure of oil revenues (government investment and private investment of oil revenues) that has an opposite sign to the coefficient of ownership structure, which is also significant. In such a case we expect a negative total effect of ownership structure of oil revenues at a certain range of executive constraint and a positive effect at other range of executive constraint.

Table 5.2: Ownership Structure of Oil Revenues, Executive Constraint and Financial Institutions

VARIABLES	Full Sample			Developing Countries		
	Depth	Access	Efficiency	Depth	Access	Efficiency
GOR	-0.013**	-0.017*	-0.020*	-0.013**	-0.025***	-0.020*
	(0.005)	(0.009)	(0.011)	(0.005)	(0.009)	(0.010)
L.EXC	0.008	0.123***	0.123***	0.009	0.120***	0.109***
	(0.024)	(0.033)	(0.034)	(0.028)	(0.033)	(0.037)
GOR*L.EXC	-0.008	0.018	0.049***	-0.006	0.018	0.040**
	(0.014)	(0.015)	(0.018)	(0.016)	(0.015)	(0.019)
POR1	-0.020**	-0.084***	-0.016	-0.019**	-0.087***	-0.016
	(0.009)	(0.011)	(0.015)	(0.009)	(0.011)	(0.015)
POR*L.EXC	0.026*	0.120***	0.043**	0.021	0.114***	0.040**
	(0.014)	(0.015)	(0.020)	(0.015)	(0.015)	(0.020)
Education	-0.016	-0.007	0.025	-0.017	-0.006	0.014
	(0.011)	(0.018)	(0.021)	(0.011)	(0.018)	(0.023)
Inflation	0.004**	-0.001	-0.001	0.004**	0.000	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GDPPC	0.063***	0.152***	0.075***	0.065***	0.113***	0.050***
	(0.009)	(0.019)	(0.019)	(0.009)	(0.016)	(0.019)
FDI	0.002	0.003	-0.008***	0.001	0.004*	-0.009**
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
FINOPEN	0.007***	0.021***	0.008**	0.006**	0.024***	0.008**
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Constant	-0.533***	-1.178***	-0.141	-0.534***	-0.857***	0.134
	(0.085)	(0.165)	(0.166)	(0.092)	(0.147)	(0.169)
Observations	1,193	1,195	1,195	930	932	932
R-squared	0.979	0.943	0.816	0.957	0.91	0.806
Country Fixed Effects	YES	YES	YE	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES

GOR is the share of government oil Revenue, POR is the share of private oil revenue, EXC_{t-1} is an executive constraint. $GOR*EXC_{t-1}$ is the interaction between the share of government oil revenue and executive constraint, POR*EXC is the interaction between the share of private oil revenue and executive constraintEducation is a log of secondary school enrolment. Inflation is the log of the consumer price index, GDPPC is the log of gross domestic product per capita, FDI is a foreign direct investment as a percentage of GDP and FINOPEN is the financial openness index for capital account openness. *** 1% significance level, ** 5% significance level, *10% significance level.

Furthermore, regarding the interactive effect between private investment and executive constraints, we find a positive and significant relationship with all three dimensions of financial institutions but a threshold effect in only on depth and access dimensions (the coefficient on efficiency was insignificant). These threshold effects are reported in figure 5.1, where countries with weak executive constraints, the effect of private investment on both depth and access are negative but positive in countries with strong executive constraints. Essentially, good participatory governance reduces the negative effect of government and private investment of oil revenues and thus turns it from a curse in the financial sector to a blessing among oil-producing countries. This finding is in line with Bhattacharyya and Hodler (2014); Dwumfour and Ntow-Gyamfi (2018); Kassouri et al. (2020); Khan et al. (2020) and Mlachila and Ouedraogo (2020). Our finding however, provides further information than previous studies by providing the aspect of financial development (efficiency in the case of government investment of oil revenues and both access and depth dimensions in the case of private investment of oil revenue) that is deriving the threshold effect of political institutions (executive constraint) on the impact of oil revenue on financial development (institutional development). Focusing on developing countries perspective, similar results (qualitatively) are reported for the private investment of oil revenues.
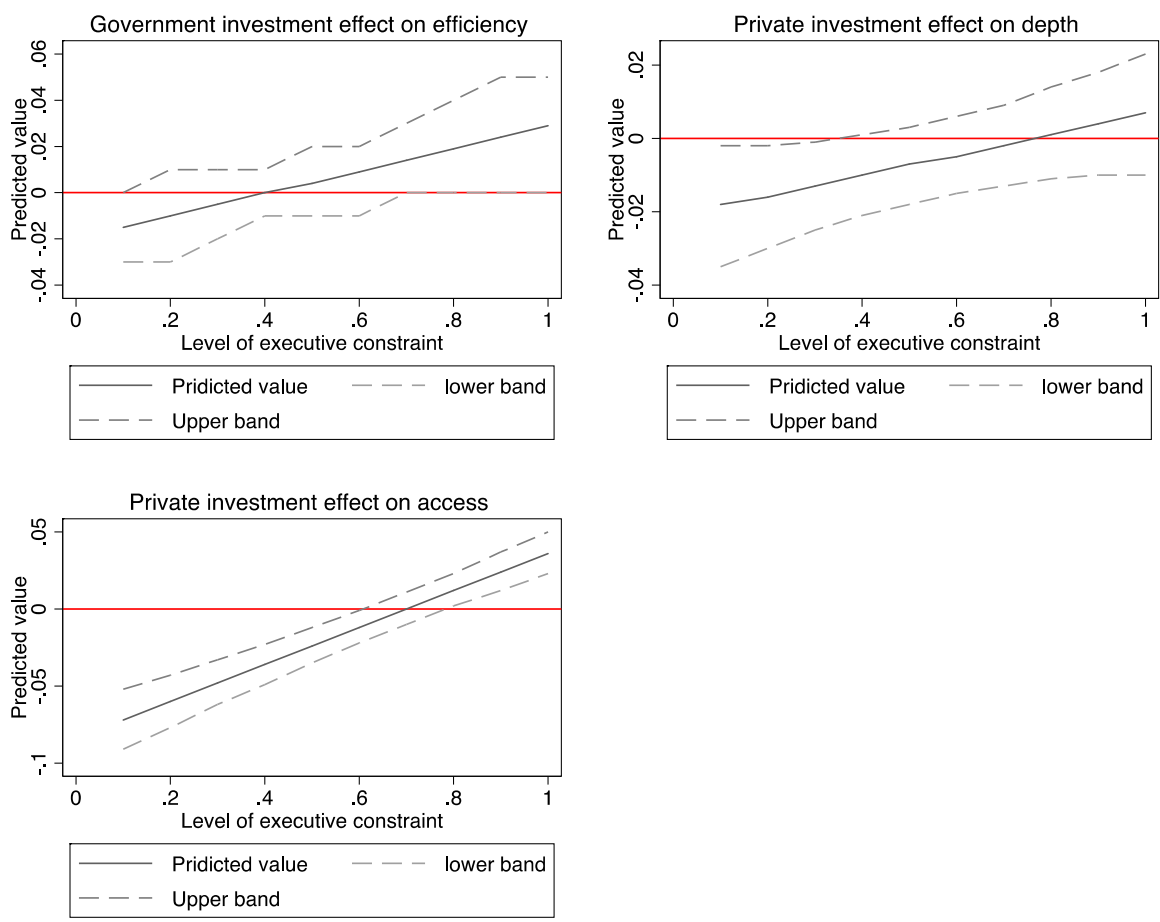
Figure 5.1: Predicted impact of government and private investment of oil revenues on financial institutions at various levels of executive constraints. Note: The graphs are only for cases where we have a threshold effect for the full sample result. Threshold is defined in footnote 2.

In the case of the control variables, we find inflation to be positive and significant for the depth of financial institutions. This implies that as inflation increases the cost of borrowing rises, which stimulate financial institutions to give out more loans, induces insurance firms to charge higher premium and pension funds to increase their annuity payments to abate the cost of living. Again, the higher-income level increases depth, access and efficiency of financial institutions. This means that as per capita income level of a country rises, the demand for financial services likewise increases, all other things being equal.

We find FDI to reduce the efficiency of the financial institution and this can be attributed to the rate of repatriation of profit by foreign firms to their parent firms and hence affects the

profitability of financial institutions. Financial openness provides a positive and significant effect on all the dimensions (depth, access and efficiency). This implies that oil-producing countries open up their economies for the inflows and outflows of funds, which helps to develop financial institutions. These findings fall in line with prior expectations and existing literature (see Bhattacharyya & Hodler, 2014; Kurronen, 2015; Dwumfour & Ntow-Gyamfi, 2018).

5.1.3 Ownership Structure of Oil Revenues and Financial Markets: The Role of Executive Constraints

This section focuses on how government investment of oil revenues (GOR) and private investment of oil revenues (POR) influence the development of the financial markets' conditional on executive constraints. As done in section 5.1.2 above, the data is split for developing countries and made the case to the effect of financial markets development being higher in advanced economies as compared to developing economies. Therefore, the need to check this unique heterogeneity. We also estimated the results as presented in Table 5.3 with fixed effect model and the results of a two-step system GMM is reported in appendix A5. We find robust results for both fixed effects and GMM that are in line with theory. However, we based our analysis on the fixed effects model.

Specifically, the full sample reports a negative and significant relationship between GOR and the depth of financial markets. The results imply that there is a financial curse on countries whose governments do not invest oil revenues very well in the domestic economy. This finding is contravening the work of Canh and Thong (2020) who find positive relationship between natural resource rent and financial markets depth. Thus, inappropriate investment of oil revenues lowers the development of the stock and bond markets, respectively. However, the study finds a positive and significant relationship with private investment for the depth of the

financial markets. This finding supports the work of Canh and Thong (2020). This suggests that the presence of IOCs in oil-producing countries enhances the development of the financial markets' depth.

The executive constraints show a negative and significant relationship with the depth and efficiency of financial markets all other things being equal. The interactive effect (POR*EXC$_{t-1}$) shows a negative and significant relationship with financial markets access. This means that as executive constraints get stronger, there is a weakening effect on access to financial markets. This finding is contrary to the existing literature that has established a positive relationship (see Bhattacharyya & Hodler, 2014; Dwumfour & Ntow-Gyamfi, 2018 Kassouri et al., 2020). Although, the interaction is negative and significant for the access dimension of financial markets, it failed to meet the requirement for a threshold effect since the coefficient estimate for private investment is insignificant at even the 10 percent level. In the case of developing countries sample, the evidence shows a threshold effect for both depth and access dimensions for private investment and only depth dimension for government investment. This finding confirms with previous literature (see Khan et al. 2020; Kassouri et al. 2020; Mlachila & Ouedraogo 2020). This suggests that results from the developing countries sample are qualitatively different from the full sample, which the study argues is driven by the differences in financial markets' development between developed and developing countries.

Regarding, the control variables, the study finds education to be negative and significant for depth and access to financial markets in both subsamples. This finding is so because the data is dominated by developing countries where most citizens lack the financial literacy to understand how the stock markets work and operate. This makes them hesitant to invest in the stock market. The study finds inflation to be positive and a significant determinant of financial markets development meaning that inflation sends a signal of a higher return to investors,

which makes them invest in the stock markets leading to its development. Additionally, the study finds GDP per capita to be a negative and significant determinant of financial   markets

Table 5.3: Ownership Structure of Oil Revenues, Executive Constraints and Financial Markets

VARIABLES	Fixed Effects			Fixed Effects		
	Depth	Access	Efficiency	Depth	Access	Efficiency
GOR	-0.038***	-0.012	-0.009	-0.034***	-0.010	-0.012
	(0.011)	(0.011)	(0.018)	(0.010)	(0.011)	(0.018)
L.EXC	-0.077**	-0.029	-0.331***	-0.031	-0.027	-0.268***
	(0.036)	(0.031)	(0.091)	(0.034)	(0.029)	(0.102)
GOR1*L.EXC	0.000	0.000	-0.038	0.028*	0.001	0.000
	(0.017)	(0.016)	(0.048)	(0.016)	(0.016)	(0.055)
POR	0.042***	0.013	0.023	0.066***	0.0220*	0.040*
	(0.014)	(0.012)	(0.023)	(0.014)	(0.013)	(0.023)
POR1*L.EXC	-0.014	-0.025	-0.011	-0.045**	-0.035**	-0.038
	(0.020)	(0.017)	(0.039)	(0.019)	(0.016)	(0.040)
Education	-0.154***	-0.111***	0.000	-0.113***	-0.086***	0.015
	(0.021)	(0.019)	(0.036)	(0.021)	(0.021)	(0.037)
Inflation	0.006*	0.004	0.024***	0.004	0.002	0.021***
	(0.004)	(0.003)	(0.007)	(0.003)	(0.003)	(0.008)
GDPPC	-0.015	-0.052***	-0.095***	0.036	-0.033*	-0.075**
	(0.020)	(0.018)	(0.032)	(0.022)	(0.020)	(0.033)
FDI	0.008***	0.011***	0.018***	0.007**	0.012***	0.017***
	(0.003)	(0.003)	(0.005)	(0.003)	(0.003)	(0.005)
FINOPEN	0.015***	0.005	0.007	0.011***	0.001	0.002
	(0.004)	(0.004)	(0.009)	(0.003)	(0.003)	(0.010)
Constant	0.573***	0.708***	0.774***	0.02	0.492***	0.564*
	(0.195)	(0.168)	(0.295)	(0.220)	(0.190)	(0.320)
Observations	1,195	1,193	1,195	932	930	932
R-squared	0.903	0.929	0.797	0.880	0.919	0.738
Country Fixed Effects	YES	YES	YES	YES	YES	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES

GOR is share of government oil Revenue, POR is share of private oil revenue, EXC_{t-1} is an executive constraint. $GOR*EXC_{t-1}$ is the interaction between the share of government oil revenue and executive constraint, $POR*EXC_{t-1}$ is the interaction between the share of private oil revenue and executive constraint. Inflation is the log of the consumer price index, GDPPC is the log of gross domestic product per capita, FDI is a foreign direct investment as a percentage of GDP and FINOPEN is the financial openness index for capital account openness. *** 1% significance level, ** 5% significance level, *10% significance level.

access and efficiency showing that higher income does not necessarily mean people will participate in financial markets activities in oil-producing countries.

FDI enters the regression with strong and positive effects for the full and developing countries samples. This means that Multinational Corporations (MNCs) participation in an economy improves financial markets activities since MNCs are usually listed on the stock markets, which adds more to its depth and access to financial markets. Finally, financial openness enters the regression with a positive and significant effect on the depth of financial markets for both samples. This means that a more open economy attracts the inflows of foreign capital, which are used in the productive sectors of oil-producing countries economies thereby creating more resources for the development of the financial markets in oil-producing countries.

5.2 Robustness

The democracy variable describes whether a country is democratic (competitive elections) or non-democratic (non-competitive elections) and the results for this is reported in Table A6 of the appendix. Results using political rights to measure political institutions are reported in Table A7, whereas for civil liberties, results are reported in Table A8 in the appendix. In general, there are some differences in the results for the key variable of interest (government and private investment of oil revenues and the respective interaction with political institution). First, the evidence using democracy as the political institution variable shows a threshold effect for government investment based on access dimension of financial institution contrary to what we find (threshold effect was on efficiency) using executive constraint. In the case of financial market development, the key result of interest is consistent to the main result of the study, which is based on executive constraint. Moreover, the results reveal a threshold effect of private investment via only access dimension of financial institutions relative to the main results where we find a threshold effect for both depth and access. Furthermore, there is evidence of threshold

effect of private investment via the depth dimension of financial market development, which was not the case for the results based on executive constraint.

Second, in the other two measures of political institutions (political right and civil liberty), the evidence indicated a threshold effect of government investment via the access dimension instead of the efficiency dimension from our main results based on executive constraint. In the case of private investment, the results reveal a threshold effect via depth of financial market for both political rights and civil liberty. Furthermore, there is evidence of a threshold effect for political rights via efficiency dimension of financial market development, contrary to the evidence from executive constraint results. These differences in results based on the different measures of political institutions indicates that how we measure political institutions matter in financial markets development and ownership structure of oil revenues nexus. More importantly, different proxies for political institutions capture different aspects of the political economy, which reflects the differences we observed using the different proxies.

6. Conclusion and Policy Implications

This study draws lessons from the previous literature that have often argues that natural resource revenues could lead to a "financial curse" because of its abundance. It may create weaker contracting institutions that help the ruling class to benefit at the expense of the majority of the citizens, which may lead to low financial institutions and markets development. Previous studies on this theme show that natural resource revenue tends to hurt financial development in countries with weak political institutions, whereas the effect is positive in countries with strong political institutions. This among other things suggest a threshold effect of natural resource revenues on financial development, where the threshold is driven by the quality of political institutions (see Bhattacharyya & Hodler, 2014; Dwumfour & Ntow-Gyamfi, 2018; Khan et al. 2020; Kassouri et al. 2020; Mlachila & Ouedraogo 2020). Others such as Beck et

al. (2003) show that the endowment effect influences the quality of institutions, which has consequences on the effect of natural resources on financial development.

This current study elicits its support from these findings and further extended the existing knowledge on this theme by providing new evidence on ownership structure of oil revenues and financial institutions and markets development, (such as depth, access and efficiency) whilst considering the role of political institutions.

In this study, data from 82 oil-producing countries are used to investigate how ownership structure of oil revenues influence the development of financial markets and institutions. The study considers political institutions as a conduit through which oil revenues investment influence financial markets and institutions development. The study uses Panel Vector Autoregressive (PVAR) model to determine the proportion (share) of oil revenues invested by government and those invested by IOCs. Again, using the same dataset for the 82 countries from the period 1990-2015, a fixed-effects and GMM models are used to estimate the model parameters.

The results from the main model specification shows that the effect of government oil revenue investment conditional on the level of executive constraint has a threshold effect on the efficiency of financial institutions. It reduces the efficiency of financial institutions at weak executive constraint, whereas it increases efficiency of financial institutions when there are limitations on the executives (strong executive constraint). Similarly, private oil revenue investment shows that weak political institutions reduce IOCs' investments in the domestic economy that affect financial institutions access and depth, whilst strong political institutions have the reverse effect on IOCs' investment on financial institutions access and depth. The study reports similar findings when the sample is limited to the developing countries. The conclusion from this is that the quality of political institutions in the form of executive

constraint matter on how ownership structure impacts on financial institutions development. Furthermore, it highlights which dimension of financial institution's development (depth, access and efficiency) that each of the components of ownership structure of oil revenues (government investment and private investment) impacts.

Contrary, using financial markets measures, the study finds no threshold effect of government oil revenues investment on financial markets' development in the full sample. Thus, executive constraints do not enhance government oil revenues investment on financial market's depth, efficiency and access. For private oil revenues investment, the study finds no threshold effect on financial market development in the full sample. However, there is evidence of a positive and significant effect on the depth of financial markets. This means that although the quality of political institutions does not influence the impact of private oil revenues investment on financial market development, nonetheless, private investment of oil revenue has a direct positive influence on financial market development. However, the narrative is quite different from that of the developing countries subsample. In developing countries, substantial limitations on the executive enhances financial markets depth and access. This means that it gives the IOCs the leverage to keep their oil funds in the local stock markets since their investment is protected or will give them more return than advanced economies with a similar political risk level.

Regarding policy implications, political institutions are good indicators in helping to resolve the negative effect that government and private investment of oil-revenues may have on financial institutions. This means that oil-producing countries should develop their institutions to help them address the financial-curse so that IOCs do not take advantage to repatriate their profit to parent companies since strong political institutions serve as a motivating factor for them to retain their money in the local financial markets. Additionally, oil-producing countries

need to work hard to improve upon the depth of their financial institutions and markets since investment by government and IOCs are not proving to be efficient in developing the sector. Regulators in the financial sector of those countries need to put in place adequate financial innovation policies to improve on the depth of their financial system so that they can take advantage of oil revenue investments by government and IOCs for financial system development.

There are few limitations to this study, which are highlighted as follows. First limitation is that, this study has not been able to investigate the role of political institutions in oil-rentier states or net oil-exporting countries. This is because the sample consists of all oil-producing countries both net oil-exporting and net oil-importing countries. Further studies should concentrate on net oil-exporting countries. Second, the volatility of government or private investment due to fall in oil revenues is of interest to researchers and policymakers since this can help to explain business cycle effects of oil revenue volatility on financial developments. Third, looking at IOCs oil-wells investments in weak states and how that influences financialisaton is of interest to academia and policy makers as such should be explored in future research.

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Appendix A1-A8

Table. A1: 1st and 2nd Generation Panel Unit Root Test

Variable	Im, Pesaran and Shin	CADF
fd_fid	-4.1139 ***a	-3.372 ***b
fd_fia		-3.518 ***b
fd_fie	-15.3615 ***a	-3.112 ***a
fd_fmd	-5.6045 ***a	-3.31 ***b
fd_fma	c	-2.909 ***b
fd_fme	c	-2.717 ***b
GOR	-8.253 ***a	-3.114 ***a
POR	-7.748***	-1.573 ***a
EXC	c	c
PR	c	c
CL	c	c
Dem	c	c
Education	c	c
Inflation	-4.1899 ***b	-3.873 ***a
FDI	c	c
FINOPEN	c	-4.05 ***b
GDPPC	-16.614 ***b	-9.145 ***b

Notes: The Im, Pesaran and Shin is the panel unit root test without cross-sectional dependence which stands for the first-generation unit root test of stationarity. Whilst CADF is the panel unit root test with cross-sectional dependence which represent the second-generation unit root test. fd_fid is the financial institutions depth, fd_fia is financial institutions access, fd_fie is financial institutions efficiency, fd_fmd, financial markets depth, fd_fma, financial markers access, fd_fme, financial markets access, GOR is government oil revenues, POR is private oil revenues, EXC is executive constraints, PR is political rights, CL is civil liberty, Dem is democracy, FDI is foreign direct investment, FINOPEN is financial openness, GDPPC is GDP per capita. *** is significance at 1%, a, stationary at level, b is stationary at first difference and c is no respondent either no enough data points or more zeros in the case of a dummy variable.

Table A2: PVAR Estimates to Predict the Shares of Government and Private Investment

	lnPIP	lnOilrent	lnGIP
lnPIP$_{t-1}$	0.952***	-0.365**	0.022
	(0.049)	(0.128)	(0.050)
lnOilrent$_{t-1}$	0.032**	0.598***	0.031*
	(0.016)	(0.050)	(0.017)
lnGIP$_{t-1}$	0.044	-0.591***	0.837***
	(0.028)	(0.082)	(0.042)
lngdpcap	-0.070**	-.334**	-0.059
	(0.034)	(0.095)	(0.043)
Inflation	-0.005	-0.182**	-0.031**
	(0.070)	(0.026)	(0.012)
Observations	1681	1681	1681
J-Stats	279.820		
P-value	0.000		

Table A3: Eigenvalues for Stability Test of the PVAR Model

Real	Imaginary	Modulus
0.917	0.000	0.916
0.735	0.085	0.740
0.735	-0.085	0.740

All the eigenvalues lie inside the unit circle. PVAR satisfies stability condition.

Table A4: Two-Step System GMM Results on Financial Institutions

VARIABLES	Full Sample			Developing Countries		
	Depth	Access	Efficiency	Depth	Access	Efficiency
GOR	0.002	-0.002	0.0323*	0.002	-0.002	0.049**
	(0.002)	(0.002)	(0.017)	(0.002)	(0.002)	(0.023)
L.EXC	0.002	0.013	0.037	0.012*	0.024**	-0.012
	(0.009)	(0.015)	(0.045)	(0.006)	(0.011)	(0.053)
GOR*L.EXC	-0.001	0.005	-0.009	-0.001	0.004	-0.033
	(0.004)	(0.005)	(0.018)	(0.004)	(0.004)	(0.027)
POR1	-0.001	0.001	-0.043**	-0.005*	-0.007**	-0.057**
	(0.003)	(0.006)	(0.020)	(0.003)	(0.004)	(0.023)
POR*L.EXC	0.006	0.001	0.131**	0.017***	0.018***	0.164***
	(0.006)	(0.013)	(0.055)	(0.006)	(0.007)	(0.061)
Education	0.000	0.004	0.017	0.000	0.003	0.046
	(0.002)	(0.002)	(0.015)	(0.003)	(0.002)	(0.028)
Inflation	-0.001	-0.001	-0.007*	0.000	0.000	-0.007
	(0.001)	(0.001)	(0.004)	(0.000)	(0.001)	(0.005)
GDPPC	0.000	0.001	0.039**	0.002	0.003	0.037**
	(0.002)	(0.004)	(0.018)	(0.001)	(0.002)	(0.017)
FDI	-0.001	0.000	-0.007*	0.000	0.001	-0.010*
	(0.001)	(0.001)	(0.004)	(0.001)	(0.001)	(0.005)
FINOPEN	0.000	-0.001	-0.002	0.000	-0.001	-0.005
	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)	(0.006)
L.fd_fid	1.001***			0.962***		
	-0.021			(0.017)		
L.fd_fia		1.006***			0.985***	
		(0.041)			(0.025)	
L.fd_fie			0.259			0.105
			(0.310)			(0.333)
Constant	0.013	0.000	0.081	0.000	0.000	0.000
	(0.018)	(0.000)	(0.093)	(0.000)	(0.000)	(0.000)
Observations	1,165	1,165	1,165	902	902	902
No. of Countries	77	77	77	61	61	61
Time Fixed Effects	YES	YES	YES	YES	YES	YES
Instrument	43	57	42	43	51	42
AR (1)	0.003	0.00	0.094	0.016	0.000	0.193
AR (2)	0.913	0.527	0.961	0.807	0.080	0.971
Hansen Test	0.126	0.115	0.136	0.525	0.270	0.368

L.fd_fid is the lagged of financial institutions depth; L. fd_fia is lagged of financial institutions access and L.fd_fie is the lagged of financial institutions efficiency. *** 1% significance level, ** 5% significance level, *10% significance level.

Table A5: Two-Step System GMM Results on Financial Markets

VARIABLES	Full Sample			Developing Countries		
	Depth	Access	Efficiency	Depth	Access	Efficiency
GOR	0.004	-0.002	0.008	0.004	0.001	0.010
	(0.004)	(0.002)	(0.007)	(0.005)	(0.003)	(0.013)
L.EXC	0.010	0.012	-0.062**	0.006	0.002	-0.058
	(0.016)	(0.008)	(0.030)	(0.016)	(0.008)	(0.035)
GOR1*L.EXC	-0.003	0.008	-0.031**	-0.003	0.003	-0.0360*
	(0.008)	(0.005)	(0.015)	(0.008)	(0.005)	(0.018)
POR	-0.001	0.003	0.012	-0.001	0.003	0.008
	(0.007)	(0.003)	(0.012)	(0.007)	(0.006)	(0.013)
POR1*L.EXC	0.017	-0.0112*	-0.019	0.009	-0.003	-0.012
	(0.014)	(0.007)	(0.031)	(0.015)	(0.009)	(0.035)
Education	-0.001	0.007***	0.007	-0.003	0.008*	0.006
	(0.007)	(0.002)	(0.005)	(0.010)	(0.004)	(0.008)
Inflation	0.002	-0.002*	0.004*	0.000	-0.001	0.006**
	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.003)
GDPPC	0.017***	0.005*	0.002	0.011	0.007	0.006
	(0.006)	(0.003)	(0.004)	(0.010)	(0.005)	(0.006)
FDI	0.000	0.001	0.002	-0.001	0.001	0.002
	(0.001)	(0.001)	(0.003)	(0.002)	(0.002)	(0.002)
FINOPEN	0.001	0.000	-0.003	-0.001	-0.001	-0.004
	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.003)
L.fd_fmd	0.885***			0.905***		
	(0.041)			(0.084)		
L.fd_fma		0.989***			0.960***	
		(0.014)			(0.034)	
L.fd_fme			1.073***			1.061***
			(0.046)			(0.088)
Constant	0.000	0.000	0.000	0.000	-0.080	-0.161**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.050)	(0.070)
Observations	1,165	1,165	1,165	902	902	902
No. of Countries	77	77	77	61	61	61
Time Fixed Effects	YES	YES	YES	YES	YES	YES
Instruments	41	54	42		54	42
AR (1)	0.000	0.000	0.001	0.000	0.005	0.015
AR (2)	0.258	0.339	0.446	0.698	0.449	0.188
Hansen Test	0.220	0.763	0.249	0.168	0.186	0.370

L.fd_fmd is the lagged of financial markets depth; L. fd_fma is lagged of financial markets access and L.fd_fme is the lagged of financial markets efficiency. *** 1% significance level, ** 5% significance level,*10% significance level.

Table A6: Oil Revenues, Democracy and Financial Markets Development

Variables	Depth	Access	Efficiency	Depth	Access	Efficiency
	Financial Institutions			Financial Markets		
GOR	-0.020***	-0.020***	-0.0104	-0.038***	0.0004	-0.015
	(0.005)	(0.007)	(0.009)	(0.011)	(0.010)	(0.018)
Dem_{t-1}	0.008	0.071***	0.050**	-0.024	-0.028*	-0.131***
	(0.012)	(0.020)	(0.020)	(0.022)	(0.017)	(0.049)
GOR*Demt-1	0.004	0.017**	0.022**	0.013	-0.008	0.005
	(0.007)	(0.009)	(0.011)	(0.011)	(0.010)	(0.024)
POR	-0.008	-0.050***	-0.016	0.053***	0.008	0.027
	(0.008)	(0.009)	(0.011)	(0.012)	(0.010)	(0.019)
$POR*Dem_{t-1}$	0.003	0.065***	0.045***	-0.032**	-0.015	-0.033
	(0.009)	(0.011)	(0.014)	(0.014)	(0.011)	(0.025)
School	-0.016	-0.010	0.025	-0.147***	-0.104***	0.009
	(0.011)	(0.017)	(0.020)	(0.021)	(0.019)	(0.036)
Inflation	0.004**	-0.0004	-0.001	0.004	0.002	0.020***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)	(0.007)
GDP Per Capita	0.063***	0.162***	0.083***	-0.028	-0.059***	-0.127***
	(0.009)	(0.019)	(0.019)	(0.020)	(0.018)	(0.034)
FDI	0.002	0.0038*	-0.007***	0.007**	0.009***	0.017***
	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.005)
FINOPEN	0.007***	0.022***	0.010***	0.016***	0.005	0.006
	(0.002)	(0.003)	(0.003)	(0.004)	(0.004)	(0.009)
Constant	-0.524***	-1.215***	-0.172	0.643***	0.767***	0.950***
	(0.086)	(0.173)	(0.171)	(0.197)	(0.168)	(0.308)
Observations	1,218	1,218	1,218	1,218	1,218	1,218
R-squared	0.978	0.942	0.816	0.903	0.929	0.794
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Dem_{t-1} is lag of democracy. $GORDem_{t-1}$ is the interaction between the share of government oil revenue and democracy, $PORDem_{t-1}$ is the interaction between the share of private oil revenue and democracy. All other variables definitions remain as those reported in the main text.
*** 1% significance level
** 5% significance level
*10% significance level

Table A7: Oil Revenues Political Rights and Financial Markets Development

Variables	Depth	Access	Efficiency	Depth	Access	Efficiency
	Financial Institutions			Financial Markets		
GOR	-0.016***	-0.019***	-0.012	-0.036***	-0.009	-0.026*
	(0.004)	(0.006)	(0.008)	(0.009)	(0.009)	(0.015)
PR	0.005	0.051**	0.068***	-0.027	-0.014	-0.061
	(0.013)	(0.021)	(0.021)	(0.021)	(0.017)	(0.049)
GOR*PR$_{t-1}$	0.0005	0.019*	0.029**	0.005	0.003	0.006
	(0.007)	(0.010)	(0.011)	(0.011)	(0.009)	(0.025)
POR	-0.009	-0.038***	0.0007	0.050***	0.010	0.039**
	(0.006)	(0.008)	(0.011)	(0.010)	(0.009)	(0.016)
POR*PR$_{t-1}$	0.005	0.053***	0.017	-0.033***	-0.019*	-0.058**
	(0.008)	(0.011)	(0.014)	(0.013)	(0.010)	(0.024)
Education	-0.017	-0.009	0.018	-0.154***	-0.107***	-0.006
	(0.011)	(0.017)	(0.021)	(0.021)	(0.019)	(0.036)
Inflation	0.004**	-0.0004	-0.0007	0.004	0.003	0.020***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)	(0.007)
GDP Per Capita	0.062***	0.154***	0.076***	-0.019	-0.052***	-0.114***
	(0.009)	(0.019)	(0.019)	(0.020)	(0.018)	(0.032)
FDI	0.002	0.004*	-0.007***	0.007**	0.009***	0.016***
	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.005)
FINOPEN	0.007***	0.023***	0.010***	0.017***	0.006	0.006
	(0.002)	(0.003)	(0.004)	(0.004)	(0.004)	(0.009)
Constant	-0.508***	-1.123***	-0.081	0.587***	0.700***	0.797***
	(0.086)	(0.167)	(0.166)	(0.193)	(0.167)	(0.299)
Observations	1,224	1,224	1,224	1,224	1,224	1,224
R-squared	0.978	0.941	0.813	0.901	0.928	0.790
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

PR$_{t-1}$ is lag of political rights. GORPR$_{t-1}$ is the interaction between the share of government oil revenue and political rights, PORPR$_{t-1}$ is the interaction between the share of private oil revenue and political rights. All other variables definitions remain as those in the main text.
*** 1% significance level
** 5% significance level
*10% significance level

Table A8: Oil Revenues, Civil Liberties, Financial Markets Developments

Variables	Depth	Access	Efficiency	Depth	Access	Efficiency
	Financial Institutions			Financial Markets		
GOR	-0.020***	-0.033***	-0.011	-0.041***	-0.015*	-0.034**
	(0.005)	(0.006)	(0.009)	(0.009)	(0.009)	(0.016)
Civil$_{t-1}$	0.020*	0.058***	0.050***	-0.029	0.028	-0.080**
	(0.011)	(0.015)	(0.018)	(0.018)	(0.021)	(0.040)
GOR*Civil$_{t-1}$	0.007	0.031***	0.015	0.012	0.018*	0.020
	(0.006)	(0.008)	(0.011)	(0.010)	(0.010)	(0.019)
POR	-0.006	-0.019**	-0.002	0.042***	0.005	0.032***
	(0.006)	(0.007)	(0.008)	(0.009)	(0.007)	(0.012)
POR*Civil$_{t-1}$	0.002	0.023**	0.037***	-0.028**	-0.015	-0.073***
	(0.008)	(0.011)	(0.014)	(0.014)	(0.010)	(0.026)
School	-0.015	-0.005	0.025	-0.158***	-0.107***	-0.019
	(0.010)	(0.017)	(0.021)	(0.021)	(0.019)	(0.035)
Inflation	0.004**	-3.41e-05	-0.001	0.0048	0.003	0.021***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)	(0.007)
GDP Per Capita	0.061***	0.154***	0.077***	-0.013	-0.051***	-0.101***
	(0.008)	(0.018)	(0.019)	(0.020)	(0.018)	(0.031)
FDI	0.002*	0.004*	-0.008***	0.007***	0.009***	0.017***
	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)	(0.005)
FINOPEN	0.007***	0.022***	0.010***	0.016***	0.005	0.005
	(0.002)	(0.003)	(0.003)	(0.004)	(0.004)	(0.009)
Constant	-0.519***	-1.154***	-0.120	0.566***	0.661***	0.774***
	(0.082)	(0.165)	(0.167)	(0.200)	(0.167)	(0.293)
Observations	1,224	1,224	1,224	1,224	1,224	1,224
R-squared	0.978	0.940	0.814	0.902	0.928	0.792
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Civil$_{t-1}$ is lag of Civil liberties. GORPR$_{t-1}$ is the interaction between the share of government oil revenue and civil liberties, PORPR$_{t-1}$ is the interaction between the share of private oil revenue and civil liberties. All other variables definitions remain as those in the main text.
*** 1% significance level
** 5% significance level
*10% significance level

APPENDIX B: Sample Countries

`"Albania"' `"Algeria"' `"Angola"' `"Argentina"' `"Australia"' `"Austria"' `"Azerbaijan"' `"Bahrain"' `"Bangladesh"' `"Belarus"' `"Bolivia"' `"Brazil"' `"Bulgaria"' `"Cameroon"' `"Canada"' `"Chad"' `"Chile"' `"China"' `"Colombia"' `"Congo, Dem. Rep."' `"Congo, Rep."' `"Cote d'Ivoire"' `"Croatia"' `"Czech Republic"' `"Denmark"' `"Ecuador"' `"Egypt, Arab Rep."' `"Equatorial Guinea"' `"France"' `"Gabon"' `"Georgia"' `"Germany"' `"Ghana"' `"Greece"' `"Guatemala"' `"Hungary"' `"India"' `"Indonesia"' `"Iran, Islamic Rep."' "Italy"' `"Japan"' `"Kazakhstan"' `"Kuwait"' `"Kyrgystan"' `"Lithuania"' `"Malaysia"' `"Mauritania"' `"Mexico"' `"Mongolia"' `"Morocco"' `"Myanmar"' `"Netherlands"' `"New Zealand"' `"Nigeria"' `"Norway"' `"Oman"' `"Pakistan"' `"Peru"' `"Philippines"' `"Poland"' `"Qatar"' `"Romania"' `"Russian Federation"' `"Saudi Arabia"' `"South Africa"' `"Spain"' `"Sudan"' `"Suriname"' `"Syrian Arab Republic"' `"Thailand"' `"Trinidad and Tobago"' `"Tunisia"' `"Turkey"' `"Ukraine"' `"United Arab Emirates"' `"United Kingdom"' `"United States"' `"Venezuela, RB"' `"Vietnam"' `"Yemen, Rep."'